



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/918,018	07/30/2001	Hitoshi Shimizu	FUSO1.001AUS	1041
22850	7590	06/14/2004	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			RODRIGUEZ, ARMANDO	
			ART UNIT	PAPER NUMBER
			2828	

DATE MAILED: 06/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/918,018	SHIMIZU ET AL.	
	Examiner	Art Unit	
	ARMANDO RODRIGUEZ	2828	<i>aw</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) 7-10 and 24-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 11-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>7-21-2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Response to Arguments

Applicant's arguments, see pages 8-10, filed March 8, 2004, with respect to the rejection(s) of claim(s) 1-6 and 11-23 under 35 USC 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Shimizu et al (1.2 um range GaInAs SQW lasers using Sb as surfactant).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-6 and 11-2 are rejected under 35 U.S.C. 102(a) as being anticipated by Shimizu et al (1.2 um range GaInAs SQW lasers using Sb as surfactant).

Regarding claim 1,

Shimizu et al discloses in page 1379 second column and page 1380 column 1, a laser system having single quantum well with $\text{Ga}_{0.61}\text{In}_{0.39}\text{As}_y\text{Sb}_{1-y}$, where $y \geq 0.995$; when $y=0.995$ the quantity of Sb= 0.005, which is within the recited range and serves as

a surfactant to prevent three dimensional growth. The composition of Shimizu et al shows In with a quantity greater than 0.3.

Regarding claim 2,12

Shimizu et al discloses in page 1379 second column, a laser system having a GaAs substrate.

Regarding claim 3,

Shimizu et al discloses in page 1379 second column, a laser system providing a wavelength of 1.2 μm .

Regarding claim 11,

Shimizu et al discloses in page 1379 second column and page 1380 column 1, a semiconductor laser having single quantum well with $\text{Ga}_{0.61}\text{In}_{0.39}\text{As}_y\text{Sb}_{1-y}$, where $y \geq 0.995$; when $y=0.995$ the quantity of Sb= 0.005, which is within the recited range and serves as a surfactant to prevent three dimensional growth. The composition of Shimizu et al shows indium (In) with a quantity greater than 0.3. The quantity of N is determined by the range of y_1 , where y_1 may be equal to zero as such N is canceled from the composition recited in claim 11.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4-6,11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al (1.2 um range GaInAs SQW lasers using Sb as surfactant) in view of Zhang et al (PN 6,566,688) and Spruytte et al (US 2002/0075920).

Regarding claims 4,6,14 and 16,

Shimizu et al discloses in page 1379 second column and page 1380 column 1, a semiconductor laser having single quantum well with $\text{Ga}_{0.61}\text{In}_{0.39}\text{As}_y\text{Sb}_{1-y}$, where $y \geq 0.995$; when $y=0.995$ the quantity of Sb= 0.005, which is within the recited range and serves as a surfactant to prevent three dimensional growth. The composition of Shimizu et al shows indium (In) with a quantity greater than 0.3.

Shimizu et al discloses a semiconductor laser but is silent as to the laser having a VCSEL or an edge emitting laser structure.

In column 1 lines 9-13, Zhang et al describes semiconductor lasers as any of VCSEL and edge emitting lasers.

Therefore, it would have been obvious matter of design choice to arrange the semiconductor laser as VCSEL or an edge emitting laser, since it appears that the invention would perform equally well in any of the well-known semiconductor laser structures.

Regarding claims 5,15

Shimizu et al discloses the semiconductor laser having a single quantum well layer and is silent as to the semiconductor laser having at least two QW layers.

However, the at least two QW layers are considered mere duplication of parts and in accordance with *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960), the

Art Unit: 2828

court held that mere duplication of parts has no patentable significance unless a new and unexpected result is produced. See MPEP 2144.04 VI B

Regarding claim 13 and 21,

Shimizu et al discloses a wavelength range of 1.2 um but is silent as the wavelength being at least about 1.24 um.

However, these wavelength ranges are considered to overlap, in accordance with In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990), (The prior art taught carbon monoxide concentrations of "about 1-5%" while the claim was limited to "more than 5%." The court held that "about 1-5%" allowed for concentrations slightly above 5% thus the ranges overlapped.) In the present application at least about 1.24 um allows for wavelengths less than 1.24 um, therefore a prima facie case of obviousness exists. See MPEP 2144.04 I

Regarding claims 17 and 18,

Shimizu et al discloses the semiconductor laser in page 1379 second column and page 1380 column 1 having layers of GaAs on both sides of the SQW layer but is silent of the layers having the composition of $\text{GaN}_z\text{As}_{1-z}$ with a quantity of nitrogen (N) within those layers, where $0 \geq z \leq 0.05$.

However, the quantity of N may be equal to zero in accordance to the recited range as such N may be canceled from the composition of the layer and the remaining composition is GaAs as recited by Shimizu et al.

Regarding claim 19,

Art Unit: 2828

Shimizu et al discloses in page 1379 second column and page 1380 column 1, a semiconductor laser having single quantum well with $\text{Ga}_{0.61}\text{In}_{0.39}\text{As}_y\text{Sb}_{1-y}$, where $y \geq 0.995$; when $y=0.995$ the quantity of Sb= 0.005, which serves as a surfactant to prevent three dimensional growth. The composition of Shimizu et al shows indium (In) with a quantity greater than 0.3.

Shimizu et al discloses the semiconductor laser in page 1379 second column and page 1380 column 1 having layers of GaAs on both sides of the SQW layer but is silent of the layers having the composition of GaNAs.

However, Spurytte et al teaches of a semiconductor laser using layers on both sides of the quantum layer and the composition of GaNAs, which provides long wavelength of at least 1.2 μm , as described in abstract and in paragraph [0029].

Therefore, it would have been obvious to one of ordinary skill in the art to use the layers of Spruytte et al within the semiconductor laser of Shimizu et al because it would provide a semiconductor laser which produces long wavelengths.

Regarding claim 20

Shimizu et al discloses in page 1379 second column, a laser system having a GaAs substrate.

Regarding claim 23,

Shimizu et al discloses a semiconductor laser but is silent as to the laser having a VCSEL or an edge emitting laser structure.

In column 1 lines 9-13, Zhang et al describes semiconductor lasers as any of VCSEL and edge emitting lasers.

Art Unit: 2828

Therefore, it would have been obvious matter of design choice to arrange the semiconductor laser as VCSEL or an edge emitting laser, since it appears that the invention would perform equally well in any of the well-known semiconductor laser structures.

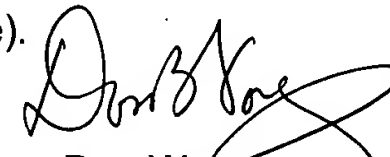
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ARMANDO RODRIGUEZ whose telephone number is 571-272-1952. The examiner can normally be reached on 9:00 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DON WONG can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


ARMANDO RODRIGUEZ
Examiner
Art Unit 2828


Don Wong
Supervisor
Art Unit 2828

AR/DW

Application/Control Number: 09/918,018
Art Unit: 2828

Page 8